

## ABSTRACT OF THE DISCLOSURE

Polycrystalline AlN 3 is deposited on the surface of an SiO<sub>2</sub> film (2) by a sputtering method, and a mask is formed. An Si-doped n-GaN layer 5 is then formed over the mask thus formed. Subsequently, an n-type cladding layer (6), which is formed from Si-doped n-type Al<sub>0.1</sub>Ga<sub>0.9</sub>N (silicon concentration  $4 \times 10^{17} \text{ cm}^{-3}$ , thickness 1.2  $\mu\text{m}$ ), an n-type light-trapping layer (7), which is formed from Si-doped n-type GaN, a multiple quantum well layer (8), which is formed from an In<sub>0.2</sub>Ga<sub>0.8</sub>N well layer and an Si-doped In<sub>0.05</sub>Ga<sub>0.95</sub>N barrier layer, a cap layer (9), which is formed from Mg-doped p-type Al<sub>0.2</sub>Ga<sub>0.8</sub>N, a p-type light-trapping layer (10), which is formed from Mg-doped p-type GaN, a p-type cladding layer (11), which is formed from Mg-doped p-type Al<sub>0.1</sub>Ga<sub>0.9</sub>N, and a p-type contact layer (12), which is formed from Mg-doped p-type GaN, are grown in sequence to form an LD layer structure.